

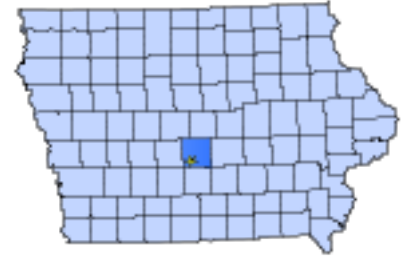


A Safe Haven For Campers: Iowa State Fair Campground Shelter

Full Mitigation Best Practice Story

Polk County, Iowa

Des Moines, IA - In June 1998, a storm with winds in excess of 100 miles per hour (mph) caused over \$465,000 in damage to the Iowa State Fair complex and the 160-acre campground. Fortunately, no one was hurt, but the potential for disaster and loss of human life was obvious. According to the National Climatic Data Center, the State of Iowa ranked sixth in the number of tornadoes across the nation with 1,974 events between 1950 and February 2004. As a result, the State Fair Board decided to construct a shelter at the campground, which is used from April to October.



The project began in the fall of 2002, when Linda Roose, Iowa Homeland Security and Emergency Management Division (HLSM) Safe Room Project Coordinator, contacted the College of Design at Iowa State University in Ames, Iowa, requesting assistance with the design for a storm shelter. Professor Bruce Bassler and two of his students worked on the project and submitted their designs to the State Fair Board. The Board selected their unique preliminary shelter design, which resembles a football when viewed from above. Tom Hurd, of Spatial Designs Architects and Consultants, developed the final design, completing the plans as prescribed by FEMA 361, Design and Construction Guidance for Community Shelters.

The Iowa State Fair and HLSM collaborated on the shelter construction project. The funding source was the Hazard Mitigation Grant Program (HMGP); funds for the project were split between Federal (75 percent) and local (25 percent) monies.

The unique design offers excellent wind resistance. The curved surfaces force the wind around the shelter on all sides, thus, alleviating wind pressure at specific points. The roof and the unique curved walls are constructed of 12-inch thick, pre-cast concrete panels. The interior partition walls are constructed of fully reinforced concrete masonry units (CMUs) and many of the interior walls are 8 inches thick.

On the east side of the structure, a concrete canopy mounted on concrete piers provides weather protection and has been designed to withstand 250-mph winds. The canopy provides cover for gatherings at the campground, such as small musical groups and social events. Descending steps radiating from beneath the canopy promote its use as a stage.

The shelter encompasses 5,200 square feet in area and is 100 feet long by 71 feet wide; it was constructed to hold approximately 400 people. When not in use as an emergency shelter, the large multi-purpose building is used by both the fairground staff and campers.

Whether to design and construct shelters that can provide protection for all attendees at a state fair or, as in the approach taken by the Iowa State Fair, for a selected group with the greatest need, is a decision that will need to be based on a state's priorities and resources. Constructing the shelter is a big step toward providing for the safety of campers who would otherwise have nowhere to turn.

Activity/Project Location

Geographical Area: **Single County in a State**

FEMA Region: **Region VII**

State: **Iowa**

County: **Polk County**

City/Community: **Des Moines**

Key Activity/Project Information

Sector: **Public**
Hazard Type: **Tornado**
Activity/Project Type: **Safe Rooms/Community Shelters**
Structure Type: **Safe Room/Community Shelter**
Activity/Project Start Date: **09/2002**
Activity/Project End Date: **05/2004**
Funding Source: **Hazard Mitigation Grant Program (HMGP)**
Funding Recipient: **Cultural Facility**
Funding Recipient Name: **Iowa State Fairground**

Activity/Project Economic Analysis

Cost: **Amount Not Available**

Activity/Project Disaster Information

Mitigation Resulted From Federal
Disaster? **No**
Value Tested By Disaster? **Unknown**
Repetitive Loss Property? **Unknown**

Reference URLs

Reference URL 1: http://www.fema.gov/pdf/plan/prevent/bestpractices/ia_campgroundcs.pdf
Reference URL 2: <http://www.fema.gov/plan/prevent/bestpractices/casestudies.shtm>

Main Points

- The State of Iowa ranked sixth in the number of tornadoes across the nation with 1,974 events between 1950 and February 2004. As a result, the State Fair Board decided to construct a shelter at the campground, which is used from April to October.
- The Iowa State Fair and HLSEM collaborated on the shelter construction project.
- The shelter encompasses 5,200 square feet in area and is 100 feet long by 71 feet wide; it was constructed to hold approximately 400 people. When not in use as an emergency shelter, the large multi-purpose building is used by both the fairground staff and campers.



View of the front entrance of the shelter.



Inside view of concrete walls.